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SECURITY INFORMATION
CENTRAL INTELLIGENCE AGENCY REPORT

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INFORMATION REPORT

REPORT

CD NO.

COUNTRY

East Germany

DATE DISTR. 11 May 1953

SUBJECT

Research Projects at the Physical Chemistry
Institute, Greifswald University

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SUPPLEMENT TO
REPORT NO.

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2. The State Planning Commission approved the following research tasks to be conducted at the Physical Chemistry Institute, Greifswald University, during 1953:

A. The development of scale-resistant metal alloys.

- (1) Oxidation processes on Fe to FeO in CO₂-CO between 800 and 1000°C. This task was completed by Dr. Pfeiffer² and his assistant.
- (2) Oxidation processes on nickel and nickel alloys. This task has been completed by Dr. Pfeiffer and his assistant.
- (3) Oxidation tests on titanium and nickel with oxidizing vapor treatments between 800° and 1100°C. This task has been completed by Dr. Pfeiffer and his assistant.
- (4) Sulphurization tests on iron, nickel, and nickel alloys between 600° and 750°C. This task has been completed by Dipl. Chem. Rahmel.
- (5) Kinetics of the development of thin oxide films on nickel at 400°C. This task has been completed by Dr. Engell but has not yet been published.
- (6) Selenisation of cadmium at 290°C. This research task is being conducted by Dipl. Chemists Rahmel and Flint. For this particular task, 87,000 eastmarks were made available. This amount was paid to the researchers in quarterly installments.

B. Mixed oxide semiconductors.

- (1) The conductivity of ZnWO_4 and NiWO_4 as a function of oxygen pressure and temperature and foreign oxide additions. This task was completed by Dr. Landstern and (fnu) Raether, but has not been published.
- (2) The conductivity of ternary systems $\text{NiO-Li}_2\text{O-Cr}_2\text{O}_3$ and $\text{ZnO-Li}_2\text{O-Al}_2\text{O}_3$.

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25 YEAR RE-REVIEW

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(solid solution series). This task has been completed by Dr. Landsberg and student assistant K. Abel, but has not been published.

- (3) Thermoelectric power and conductivity of NiS and $\text{NiS} \pm \text{Hg}_2\text{S}$. This task was completed by Flint.
- (4) The conductivity of CaO as a function of oxygen pressure and temperature and foreign oxides at 700°C . This problem was completed by Dr. Gerhard Traenckler and has not yet been published.
- (5) The conductivity of binary system $\text{Bi}_2\text{O}_3\text{-CaO}$. This was completed by Dipl. chem. Horst Peters.
- (6) The conductivity of Bi_2O_3 -mixed oxides as a function of oxygen pressure and temperature. This was completed by Dr. Traenckler and has not been published.
- (7) The conductivity of cadmium selenide. Work being done by chemist Gerhard Flint.
- (8) The conductivity of TiO_2 -mixed oxides independent of oxygen pressure and temperature. Work concluded by Dipl. chem. Ruth Traenckler-Greese and Dipl. Phys. Horst Grunewald. Dipl. Phys. Grunewald, in conjunction with Greifswald University, has developed four new type circuit control semiconductors (Regel Halbleiter) composed of Fe_2O_3 and mixed oxides. Grunewald has been working at Draloid since the summer of 1952.

C. Oxidation cell electrodes (Brennstoffelemente).

Mixed oxides of the rare earths were examined for their oxygen ion conductivity by means of X-rays. In this problem, great experimental difficulties were involved because of the high oxidation temperatures required. These difficulties could have been avoided by employing iridium surfaces. This task is being conducted by Dipl. chem. Peters. Approximately 35,000 eastmarks have been made available to Peters for this work.

D. Heterogeneous catalysis and chemisorption.

- (1) Theoretical and experimental examinations of chemisorption of oxygen and nitrogen on NiO and NiO between 20° and 600°C . This work was completed by Dr. Engell and has partially been published.
- (2) The dependence of H_2O dissociation on the electron lattice defect of oxidized catalysts. This work has been completed by physical chemists Reinhard Glanz and H. J. Engell and has been published. An amount of 42,000 eastmarks was made available for this work.

E. General solid body reactions and electrochemical surface layers.

- (1) Ore reduction, H_2 reduction of NiO between 200° and 300°C . This work is being conducted by chemist Alfred Rahmel and is almost completed.
- (2) The formation of electrochemical and moderately corrosive AgBr layers on Ag in aqueous Br-Br_2 solutions at 20°C . This work was completed by Frau Dr. Pfeiffer and has been published.
- (3) The formation of passive layers on nickel in H_2SO_4 and the influence of halogen ions. This work has been completed by Frau Dr. Pfeiffer and has not yet been published.

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- (4) Comprehensive theoretical treatment of diffusion phenomena in solid bodies. This work was completed under the supervision of Dr. Seyferth and as yet has not been published. An amount of 27,000 eastmarks was made available for this work.

2. Control

For the purpose of financial and work control, short reports had to be sent to the State Planning Commission through the State Secretariat every month. These reports were printed forms with the following questions covering each research task:

1. Important partial results
2. Work discontinued
3. Work continued
4. Difficulties because of lack of instruments
5. Financial difficulties
6. Work resumed
7. Personnel difficulties

In using the above form, the correct answers were simply checked.

3. The following personnel were at the Physical Chemistry Institute at Greifswald at the conclusion of the 1952 summer term:

Professor Dr. Karl Hauffe, Director of the Institute.
Dr. H. J. Engell, physical chemist, assistant to the director.
Dr. Harald Pfeiffer, physical chemist, assistant to the director.
Dr. Imtraud Pfeiffer, physical chemist, assistant to the director.
Dr. Wolf Landsberg, physical chemist, assistant to the director.
Dipl. chem. Reinhard Glanz, physical chemist, assistant to the director.
Dipl. chem. Alfred Rahmel, physical chemist, assistant to the director.
Dipl. chem. (fnu) Baether, physical chemist, assistant to the director.
Dipl. chem. Gerhard Flint, physical chemist, assistant to the director.
Dipl. chem. Horst Peters, physical chemist, assistant to the director.
Dipl. chem. Ruth Traenckler-Freese, inorganic chemist.
Dr. Gerhard Traenckler, physicist.
Dipl. physicist Horst Grunewald, physicist.
Dr. Carl Seyferth, mathematical physicist.

The following were technical assistants:

Frau Westendorff, laboratory assistant.
K. Abel, student of chemistry, and permanent assistant.
4 or 5 other chemistry students for short-term assistantships.

Fräulein H. Meyer and Fräulein A. Koch, secretaries.
Rudolf Bernschein, Institute glass blower.
O. Ruehl, in charge of technical drawings and photography.
One cleaning woman
One handyman

4. All scientific assistants and scientific staff personnel are permanently employed at the Institute. Scientific assistants are paid between 800 and 900 eastmarks monthly. Lower grade scientific personnel receive 300 to 400 eastmarks monthly - according to length of service. These salaries were top salaries which were unobtainable at all universities.

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5. Instruments in use at the Institute include:

- 1 X-ray installation, VEB Transformatorwerk, Dresden, new
- 1 Zeiss Neophot (metal microscope), Zeiss, Jena
- 1 six-string oscillograph with accessories, RFT Koeppenick Berlin
- 1 high frequency generator, three kilowatt, RFT Koeppenick Berlin
- 1 Tammann furnace with transformer

All precision resistors, bridges, potentiometers and lightspot galvanometers from RFT, Siemens (SAC) and Felten-Guillaumet are new and very good.

6. Professor Haufler, Dr. Engell, Dr. and Frau Dr. Pfeiffer left Griefswald at the beginning of the 1952 winter term and transferred to Humboldt University, Berlin. Dr. Landsberg is temporarily in charge of the Institute and is considered to be a promising scientist. Dr. Landsberg works within the general framework of electrochemical investigations on the mechanism of the passivity phenomena in metals. It is well known that he is working experimentally on the development of passivity on zinc and nickel monocrystals in the sense of the surface layer theory of chemisorption of Engell-Haufler-Schottky. Dr. Landsberg is assisted in these experiments by two assistants.

No successor has been appointed for Professor Haufler. Dr. Neumann of Chemnitz, Dr. K. Nagel of Erlangen, Dr. Schirmer of Stickstoffwerk Riesteritz, and Dr. Witzmann of Berliner Gluehbirnenwerk were all originally considered for the position of director succeeding Professor Haufler. Neumann and Nagel declined to come to East Germany and Schirmer was turned down by the East German Ministry for Industry, and the Central Committee of the SED. Schirmer is an SED member and was scheduled to take over a directorship at Leuna. Witzmann comes from K.I. Berlin Dahlen, Thiessen group. During the war, Witzmann lectured on physical chemistry in Heidelberg. He does not belong to any political party.

7. In particular, the following Russian literature is available for chemical institutes:

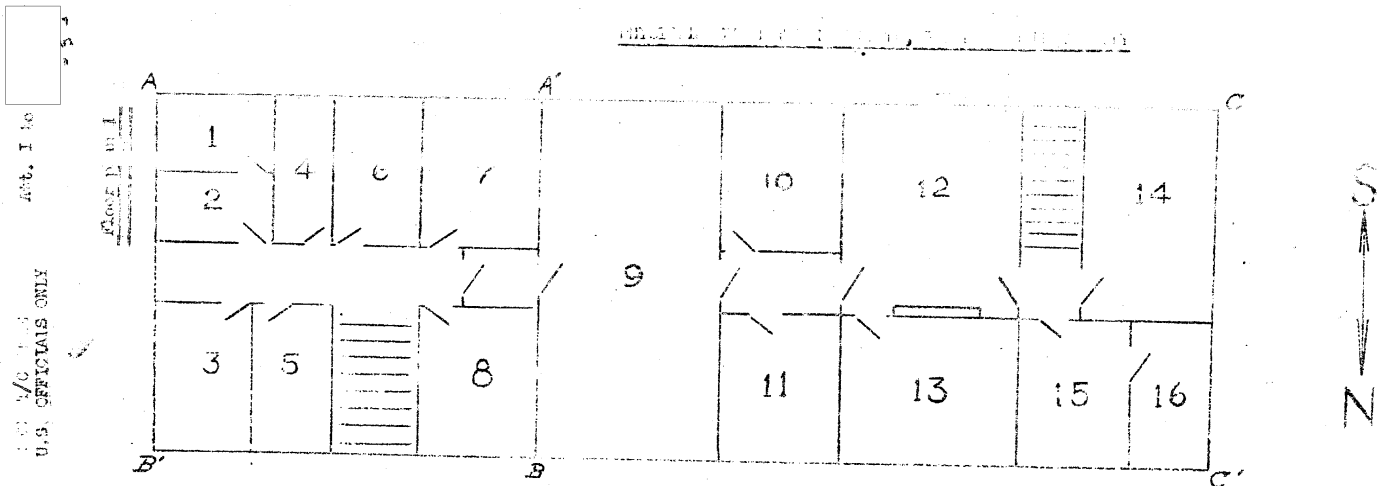
Academy reports, Journal for Applied Chemistry, Journal for Physical Chemistry and Chemical Annals (mostly organic chemistry). There are also a large number of Russian textbooks in all fields of chemistry.

8. Explanation for floor plan I, contained in Attachment I.

AA'BB' is the old institute. A'CC'B was a former roof which was built from 1950 to 1952. The old building was included in the new construction. With the aid of a large distributor switch, AC - DC three-phase current can be obtained in all laboratories in the Institute. Three to four table switches with eight selective lines, in addition to the normal lines with automatic fuse and control lamps are located in each laboratory. With the aid of these installations it is possible to check the development of experiments in laboratories I and II from laboratory III. There is also a general vacuum installation with outlets at the individual laboratory tables.

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|-----------------------------|--------------------------------------|--------------------------|---|
| 1- Vordervorrauch Lab. | 5- Physik-Chemistry Institute office | 9- Phys. chem. Praktikum | 13- Halbleiter Lab. |
| 2- Glasblaseserei | 6- Dunkelkammer, Photo | 10- Direktor-Zimmer | 14- Temp.-konstruktion |
| 3- Dr. Bechert, Fluorchemie | 7- Reproduktion Lab. | 11- Halbleiter Lab. | Chemisorption Lab. |
| 4- Abteilraum | 8- Vordervorrauch Lab. | 12- Metallurgisches Lab. | 15- Halbleiter Lab. |
| | | | 16- Schreibraum und spezielle Bibliothek. |

East-West dimensions...60 meters
North-South dimensions...15 meters

